Abstract of the Disclosure

An apparatus for image coding using tree-structured vector quantization based on a wavelet transform and a method therefor are provided. The apparatus for image coding using a tree-structured vector quantization based on wavelet transform has a wavelet transform unit, a vector construct unit, an error vector unit, a scan unit, a first quantization unit and a second quantization unit. The wavelet transform unit wavelet transforms an input image signal. The vector construct unit constructs vectors, each having a tree structure in a different direction, using the wavelet transformed result. The error vector generation unit generates a plurality of error vectors by setting one of the vectors as a basic vector and performing a calculation on each of the vectors remaining with respect to the basic vector. The scan unit scans the coefficients of each of the basic vector and error vectors in a different direction. The first vector quantization unit generates a first codebook for the basic vector scanned in the scan unit, quantizes the scanned basic vector using the first codebook, and outputs the quantization result as the index of the first codebook. The second vector quantization unit generates a second codebook for the error vectors scanned in the scan unit, quantizes the scanned error vectors using the second codebook, and outputs the quantization results as the indices of the second codebook. According to the apparatus and method, the advantages of wavelet vector quantization and zerotree-coding are maximized so that the size of a codebook is reduced and the coding performance is improved.

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